DOCUMENT RESUME

ED 155 868 EC 110 769

AUTHOR McCabe, Michael V.
TITLE A Matrix Based Plan to Help Identify Gifted Students.
PUB DATE 78
NOTE 15p.; Print in original is marginal and may not reproduce well in hard copy

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS Elementary Secondary Education; Evaluation Methods; *Gifted; *Identification; *Matrices; *Recordkeeping; Records (Forms); Student Evaluation; *Talented Students; *Talent Identification

ABSTRACT

Described is the use of matrices in organizing and recording information necessary to identify gifted and talented students. It is explained that matrices could enable local educators to evaluate each student in a number of areas, develop curricula to meet the specific needs of the students, and make a comprehensive definition of giftedness administratively feasible to implement. Sample academic and talent identification matrices are presented. (CL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED155868

A Matrix Based Plan To Help Identify Gifted Students

by

Michael V. McCabe
Center for the Study of Higher Education
University of Virginia

The ERIC Clearinghouse on Handicapped and Gifted Children

August, 1978

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Michael V. McCabe

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

EC 110 769

A Matrix Based Plan to Help Identify Gifted Students

There are many plans which are used by school systems throughout the country to identify gifted students. A quick glance is all that is needed to determine that most use one of two approaches: relying heavily or exclusively on standardized test data or relying heavily or exclusively on teacher nomination.[1] However, a plan using only standardized tests fails to identify the gifted students who do not test well. Conversely, teachers often do not identify as gifted the gifted underachiever but misidentify as gifted the "dutiful and hard-working child."[2] The primary reasons why educators in most school systems typically use only a few, convenient criteria to judge whether or not a student is gifted, are that these criteria are easy to use and they do not involve much time. Nevertheless, identification procedures such as these slight the educational needs of many children for the administrative convenience of school personnel.

Students can be gifted in any of a number of areas and, as a result, educators have grappled for a long time with the problem of defining and measuring (or identifying) giftedness.[3] The U.S. Office of Education, in attempting to allow superior ability in many areas to be defined as gifted, has arrived at a broad definition of giftedness.

> Gifted and talented children are those identified by professionally qualified persons who by virtue of outstanding abilities, are capable of high performance . . . . Children capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas, singly or in combination:

1. general intellectual ability
2. specific academic aptitude
3. creative or productive thinking
4. leadership ability
5. visual and performing arts
6. psychomotor ability[4]

At first glance, this definition may appear too broad--so general in fact, that it could not be used as a practical, working definition of giftedness on the local school district level. After all, defining giftedness as a schore over 140 on an IQ test or over 97% on an achievement test is certainly a workable definition of giftedness. And besides, it may be argued, neither the time, the money, nor the personnel exist to attempt to "ferret out" all the school district's children gifted in every single different area. And even if it could be done, how would all the data be organized? The purpose of this paper will be to attempt to answer this question.

It is suggested that any plan used to identify gifted students use, as its base for recording data, a matrix.[5] A matrix can provide for the recording of all the data collected on a student on a single sheet of paper. Matrix forms are very flexible and their use can enable educators to record cumulative information, test scores of all kinds, and recommendations and nominations from many different sources. Should the local administrators desire, two matrices could be used for each student; one for academic areas and one for talent areas. Suggested matrices of these types are shown in Figures 1 and 2.

Insert Figures 1 and 2 about here

Before discussing the matrices in some detail, a few limitations should be mentioned. First, any matrix is only as accurate as the data it displays. If a student was tired when he took a science achievement test and only scored 75%, that 75% is not more or less an indicator of the student's ability merely because it is prominently displayed on a matrix. If a teacher takes little time in filling out a nomination form and, as a result, gives a student a perfect score, that score carries no more weight in a determination of giftedness just because it shows up on the matrix. What this means is that information does not become significant merely because it is recorded on a matrix. The matrix is merely a convenient recordkeeping device.

Second, these proposed matrices record quantified subjective information which, some say, is not easily (some would say not accurately) quantifiable. While there is some truth to this, it must nevertheless be stated that nominating forms have been developed which are reliable and valid to a great degree and whose reliability and validity are continually being improved.[6] Where useful, though not perfect methods of judgment exist, such as quantified teacher nomination forms, they should be used to help in the decisionmaking along with other useful but not perfect methods of judgment, such as IQ tests. These matrices make use of both of these criteria as well as a number of others.

As the reader reviews the matrices, s/he may wonder how it would be possible to arrive at a total score in a subject area given the following data: IQ-140, Achievement test-95%, Teacher recommendation-excellent. Because of this problem, it is suggested that

a point total from 1 to 5 be awarded for each test score and for each nomination.[7] In this way, points may be totalled.

On the academic matrix, columns have been provided to record student data in specific subject categories as well as in a general category. This information distinction might be helpful when developing curricula to meet certain specific academic needs of the gifted student population in the school district.[8]

An example using the academic matrix may be beneficial. Jane Doe, student, has the following test scores: IQ-125, language arts-88, mathematics-99, science-94, social studies-84. She has teacher nominations in math (38 of 40 points) and in science (35 of 35 points). Jane nominated herself in science and presented a science fair project as evidence of her ability. Her project was awarded 4 points. Two of her friends nominated her because she helps them with their homework in social studies and math. They filled out peer nomination forms and gave Jane 35/40 math points and 31 of 36 points in social studies. The following matrix points were awarded: IQ-3, language arts-3, mathematics-5, science-4, social studies-2, teacher math nomination-5, teacher science nomination-5, self nomination-4 (as stated above), peer nomination math-4, peer nomination social studies-4.[9] Jane's academic matrix would look like this:

Insert Figure 3 about here

The data indicate that Jane's developed strengths at this point in her life are in the math - science fields. The matrix does not say that these strengths should be emphasized in her gifted program.

Nor does it command that Jane be placed into programs to develop her weak areas. It merely records the information collected.

This information recorded on this sample matrix does not answer questions such as, Why didn't Jane's parents nominate her? Did she have enough time on the social studies test? Doesn't Jane like to read? Is she Jewish or black? Is Jane an only child? Do both of her parents have to work? These types of questions are often important in determining whether or not a student is gifted. Failure to consider questions similar to these when using a matrix to record data on students may result in the matrix being treated as holy writ much as IQ tests used to be. A matrix does not record all possible information which could be used to decide whether or not a student is gifted[10] and, therefore, should be used in conjunction with all other information known about the student. But it is a form which does provide a well organized record of criteria commonly used in identifying gifted students and it can be very useful in the process which a school system uses to identify its gifted students.

The proposed use of matrices to record information pertaining to the identification of gifted students is not a panacea. Matrices take time to develop, for they should be adapted to the local situation, and it requires even more time to use them effectively. But recording all identification data on a matrix would enable local educators to evaluate each student in a number of different areas. A matrix profile on each student would also be valuable in developing curriculum to meet the specific needs of the students.

Used as a vehicle to record information in an identification plan, a matrix could help make a broad, comprehensive definition of giftedness a definition which would be practical and workable as well.

FIGURE 1

Identification Matrix - Academic

Name of Student Birthdate Grade School

	Score	General	Language Arts	Math	Science	Social Studies
1. IQ Test						
2. Achievement Tests						
a. Language Arts						
b. Mathematics						
c. Science						
d. Social Studies						
3. Teacher Nomination - General						
a. Language Arts						
b. Mathematics						
c. Science						
d. Social Studies						
4. Parent Nomination						
5. Peer Nomination						
6. Self Nomination						
7. Total Points						

FIGURE 2

Identification Matrix - Talent

Name of Student Birthdate Grade School

	Art	Creativity	Dance	Drama	Leadership	Music
1. Self Nomination						
2a. Adult Nomination						
b.						
3a. Peer Nomination						
b.						
4a. Talented Adult Nomination						
b.						
5. Total Points						

FIGURE 3

Jane Doe September 7, 1967 5th Grade Local Elementary

	Score	General	Language Arts	Math	Science	Social Studies
1. IQ Test	125	3				
2. Achievement Tests						
a. Language Arts	88		3			
b. Mathematics	99			5		
c. Science	94				4	
d. Social Studies	84					2
3. Teacher Nomination - General						
a. Language Arts						
b. Mathematics	38/40			5		
c. Science	35/35				5	
d. Social Studies						
4. Parent Nomination						
5. Peer Nomination				4		4
6. Self Nomination					4	
7. Total Points		3	3	14	13	6

Reference Notes

1. See Gallagher, pp. 17-18, for a short summary of these methods. See also Martinson's book.
2. Gallagher, p. 17.
3. Many studies have provided reasons for this dilemma and especially for the inability of conventional methods of identification to discover culturally different gifted children. See Frierson, Karnes, et. al., Nichols, Burgdorf, Smith and others. See also Part III in Barbe and Renzulli.
4. U. S. Commissioner of Education, 1972, page 2.
5. Baldwin has also developed, independently of work with which this author was a part, a matrix to record identification data. Even though the matrix contains eleven criteria, it tends to emphasize the total student rather than easily allow for the identification of specific areas of giftedness as do the matrices proposed here. It is useful, however, in that it does suggest a different organizational approach and it is recommended as a resource.
6. Renzulli, J., et. al., Scales for Rating the Behavioral Characteristics of Superior Students, 1976. This manual also reviews many studies which deal with teacher identification of gifted and talented students. See also their article in Barbe and Renzulli's book.
7. Nomination forms can be scaled so that a completed form totals to a number of points. For example, rating a student on each of 10 creativity characteristics on a scale of 1-4 for each

trait provides a range of from 10-40 points which the completed form would total. See note 6.

8. Of course, in designing a matrix, the needs and goals of the students and the school district must be taken into account. Therefore, more or fewer criteria and areas could be represented on the matrix at the option of the user.

9. These scores were derived from the following scales:

   IQ: 140 - 5, 130 to 139 - 4, 120 to 129 - 3, ...

   Achievement Tests: 95 to 99 - 5, 90 to 94 - 4, ...

   Math nomination form: 36 to 40 - 5, 31 to 35 - 4, ...

   Science nomination form: 32 to 35 - 5, 28 to 31 - 4, ...

   Social Studies nomination form: 32 to 36 - 5, 27 to 31 - 4, ...

   These point totals, or weighted scores, 1 - 5, are arbitrary. Others using similar matrices may determine that different weighted scores would be more appropriate to their particular situation, student population, and/or educational philosophy and would modify the matrix accordingly.

10. It is possible, however, to record a great deal of information in the personal data section at the top of the matrix, in a comments section, or on the back of the matrix.

References

Baldwin, Alexinia, "Identification Matrix Combines 11 Testing Scores," National/State Leadership Training Institute on the Gifted and Talented Bulletin, Volume 4 Number 3, March 1977.

Barbe, W. and Renzulli, J., (eds.) Psychology and Education of the Gifted, 2nd ed., New York: Irvington Publishers, c. 1975.

Burgdorf, K., Outstanding Negro High School Students: A One-Year Follow-Up, Evanston: National Merit Scholarship Corporation, 1969.

Frierson, E. C., "Upper and Lower Status Gifted Children: A Study of Differences," Exceptional Children, Volume 32 (1965).

Gallagher, J., Teaching the Gifted Child, 2d ed., Boston: Allyn & Bacon, Inc. 1975.

Karnes, M., Zehrbach, R., Studley, W., Wright, W., Culturally Disadvantaged Children of Higher Potential: Intellectual Functioning and Educational Implications, Champaign, Ill.: Champaign Community Unit 4 Schools, 1965.

Martinson, R., The Identification of the Gifted and Talented, Los Angeles: National/State Leadership Training Institute of the Gifted and Talented, 1973.

Nichols, R. C., "The Origin and Development of Talent," National Merit Scholarship Corporation Research Reports, Volume 2 (1966).

Renzulli, J., Smith, L., White, A., Callahan, C., Hartman, R., Scales for Rating the Behavioral Characteristics of Superior Students, Wethersfield, Conn.: Creative Learning Press, 1976.

Smith, R. M., The Relationship of Creativity to Social Class, U.S.O.E. Cooperative Research Project Number 2250, Pittsburgh: University of Pittsburgh, 1965.

U.S. Commissioner of Education, Education of the Gifted and Talented, Washington: U.S. Government Printing Office, March 1972.